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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RUSTOM S. KANGA

Appeal 2009-006927
Application 10/586,414
Technology Center 1700

Decided: September 23, 2009

Before JEFFREY T. SMITH, MICHAEL P. COLAIANNI, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 6-10 and 12-25.¹ (App. Br. 2). We have jurisdiction pursuant to 35 U.S.C. § 6(b).²

We AFFIRM.

THE INVENTION

Appellant describes a method of making a hollow cylindrical printing sleeve. Claims 6, 12, and 13, reproduced below, are representative of the subject matter on appeal.

6. A method of making a hollow cylindrical printing sleeve, the method comprising:
 - a) providing a photosensitive priming element comprising:
 - i) a hollow cylindrical support layer, the hollow cylindrical support layer comprising an actinic radiation absorbing compound uniformly distributed throughout;
 - ii) at least one layer of photopolymerizable material deposited on the hollow cylindrical support layer; and
 - iii) a masking layer on top of the at least one layer of photopolymerizable material that absorbs radiation at a wavelength used to polymerize the layer of photopolymerizable material;

¹ Claims 1-5, 11, and 26 have been canceled. (Appeal Brief filed May 30, 2008, hereinafter "App. Br.," 2).

² Oral arguments were heard in this Appeal on September 15, 2009.

- b) removing portions of the masking layer by exposing the masking layer to laser radiation at a selected wavelength and power;
- c) exposing the layer of photopolymerizable material to actinic radiation through the hollow cylindrical support layer to create a floor layer of polymerized material;
- d) exposing the surface of the cylindrical sleeve to at least one source of actinic radiation to polymerize the portions of the layer of photopolymerizable material revealed during laser ablation of the masking layer, wherein the at least one source of actinic radiation comprises one or more collimated sources of actinic radiation; and
- e) developing the photosensitive printing element to remove the masking layer and the unpolymerized portions of the layer of photopolymerizable material to create a relief image on the surface of the photosensitive printing element;

wherein light rays emanating from the at least one source of actinic radiation strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.

12. The method of claim 6, wherein the at least one source of actinic radiation comprises ultraviolet lamps arranged around the photosensitive printing element, said ultraviolet lamps simultaneously exposing the entire surface of the photosensitive printing element to actinic radiation.

13. The method of claim 12, wherein the ultraviolet lamps are collimated by positioning at least one collimator between the ultraviolet lamps and the photopolymerizable printing element, said at least one collimator having first and second opposing major faces and comprising at least one cell that

extends from the first major face to the second major face, wherein the at least one collimator is defined by at least one surface that substantially absorbs actinic radiation incident upon the surface and actinic radiation passes through the collimator before reaching the photopolymerizable printing sleeve.

THE REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Ferree	US 1,986,052	Jan. 1, 1935
Plambeck, Jr.	US 2,791,504	May 7, 1957
Trump	US 3,217,625	Nov. 16, 1965
Werber	US 3,615,450	Oct. 26, 1971
Gush	US 3,619,601	Nov. 9, 1971
Speicher	US 3,645,178	Feb. 29, 1972
Karol	US 3,645,179	Feb. 29, 1972
Kitamura	US 4,868,090	Sep. 19, 1989
Fan	US 5,262,275	Nov. 16, 1993
Nellissen	US 5,686,230	Nov. 11, 1997
Cushner	US 5,798,019	Aug. 25, 1998
Gelbart	US 6,180,325 B1	Jan. 30, 2001
Kanga	US 6,413,699 B1	Jul. 2, 2002
Ohba	US 6,664,999 B2	Dec. 16, 2003
Wier	US 6,766,740 B1	Jul. 27, 2004

There are six grounds of rejection under 35 U.S.C. § 103(a) for review on appeal:

(1) the Examiner rejected claims 6-10, 13, and 14 as being unpatentable over Kanga in view of Fan, Cushner, Gush, Werber, Gelbart, Ohba, Nellissen, Wier, Trump, Karol, and Speicher;

(2) the Examiner rejected claim 12 as being unpatentable over Kanga in view of Fan, Cushner, Gush, Werber, Gelbart, Ohba, Nellissen, Wier,

Trump, Karol, and Speicher, further in view of Kitamura, Plambeck, Jr., and Ferree;

(3) the Examiner rejected claim 13 as being unpatentable over Kanga in view of Fan, Cushner, Gush, Werber, Gelbart, Ohba, Nellissen, Wier, Trump, Karol, and Speicher, further in view of Kitamura, Plambeck, Jr., and Ferree

(4) the Examiner rejected claim 15 as being unpatentable over Kanga in view of Fan, Cushner, Gush, Werber, Gelbart, Ohba, Nellissen, Wier, Trump, Karol, and Speicher, further in view of Kitamura, Plambeck, Jr., and Ferree;

(5) the Examiner rejected claims 16, 17, and 21-25 as being unpatentable over Fan in view of Cushner, Plambeck, Jr., Ferree, Nellissen, Wier, Trump, Karol, and Speicher; and

(6) the Examiner rejected claims 17-20 as being unpatentable over Fan in view of Cushner, Plambeck, Jr., Ferree, Nellissen, Wier, Trump, Karol, and Speicher, further in view of Kanga.

In rejecting the claims on appeal, the Examiner found that Kanga and/or Fan and Cushner fail to disclose the use of a collimated light source where the light strikes the photosensitive printing element at a substantially perpendicular angle to the arcuate surface. (Examiner's Answer entered August 19, 2008, hereinafter "Ans.," 3, 4, and 9-11). The Examiner relies on Werber, Gush, Gelbart, Ohba, Nellissen, Wier, Trump, Speicher, Karol and Plambeck, Jr. to show that using collimated light to obtain sharp clear relief images is conventional in the art and also that it is known in the art that fine relief images are formed when collimated light strikes

photosensitive printing elements at angles substantially perpendicular to the surface. (Ans. 4-6, and 9-12). The Examiner determined that it would have been obvious to use collimated light at an angle substantially perpendicular to the accurate photosensitive printing element in the combination of Kanga and/or Fan and Cushner for the art recognized purpose of forming fine images. (Ans. 6, 7, and 12).

Appellant contends that the Examiner has not established a *prima facie* case of obviousness because the prior art when viewed as a whole, would not have suggested using collimated sources of actinic radiation wherein the light rays emanating from the one or more sources “strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact.” (App. Br. 9-14 and 19-22).

ISSUES

(1) Has Appellant shown that the Examiner reversibly erred in determining that it would have been obvious to one of ordinary skill in the art to employ collimated light in the photosensitive printing elements of Kanga and/or Fan and Cushner such that the light rays emanating from the one or more sources “strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact” in view of the prior art of record?

(2) Has Appellant shown that the Examiner reversibly erred in determining that it would have been obvious to one of ordinary skill in the art to employ ultraviolet lamps arranged around the photosensitive printing

element to simultaneously expose the entire surface of the photosensitive element to actinic radiation in view of Kitamura?

(3) Has Appellant shown that the Examiner reversibly erred in determining that the structure of the collimator recited in claim 13 would have been obvious to one of ordinary skill in the art in view of Plambeck, Jr. and Ferree?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. The Examiner stated:

[t]he examiner believes that WIER . . . teach[es] . . . that collimating light that is to be used to image a layer underneath a mask layer in the relief printing plate formation art to form a finer image is well known in the art. The desire to have the light strike the plate even if flat instead of rounded as in a cylinder is the same as wanting to strike the plate as perpendicularly as possible at the point of image. The desire to have such a strike perpendicular at all points of the plate whether flat or cylindrical is held prima facie obvious for all the same reasons, i.e. to form a finer image.

(Ans. 14-15)

2. Nellissen discloses a body having a ball shape, on which a three-dimensional relief is provided. (Fig. 2, col. 4, ll. 62-63).
3. Nellissen discloses that sharp images are obtained using collimated light having small collimation angles. (Col. 5, ll. 30-41).
4. Wier discloses photopolymer plates and methods to expose them to provide sharp printed images, specifically: “a device and method

- for directing the ultraviolet light perpendicularly against the photopolymer plate.” (Col. 1, ll. 50-65).
5. Wier states: “[i]n order to provide a sharp clear image, it is desirable to increase angle 16 thereby orienting side surface 13 at a steep angle relative to top surface 12 minimizing any image transferred by the side surfaces 13.” (Col. 1, ll. 44-47; Fig. 1).
 6. Wier discloses that a film negative 31 may be positioned between a photopolymer plate 20 and a collimating filter 30 where light rays pass through translucent portions of film 31 striking plate 20 perpendicularly. (Col. 3, ll. 9-17, 40-49; Fig. 4).
 7. Ohba discloses: “[d]evices which record (expose) an image on an image-forming layer (photosensitive layer), which is on a support of a sheet-form printing plate (for example, a ‘photopolymer plate’), with a direct light beam (a laser beam) have been developed as printing plate exposure devices (image-recording devices).” (Col. 1, ll. 10-16).
 8. Ohba discloses collimated light which is used to expose a printing plate that is wound onto the outer periphery of a cylindrical rotary drum. (Col. 9, ll. 50-65).
 9. Karol discloses exposing a very accurate pattern in a photoresist on the outside surface of a cylinder using light that is collimated in radial planes. (Karol, col. 2, ll. 20-48).
 10. Karol states: “the gist of the invention is in the use of collimated light with conical mirrors to convert the light into radially collimated beams. The radial beams pass through masks to the

inner or outer surface of the cylinder to expose a very accurate pattern in a photoresist.” (Col. 4, ll. 55-60).

11. Kitamura discloses exposing a cylindrical element to expose a relief image using a plurality of chemical lamps 10*b* arranged around the cylindrical element. (Col. 11, ll. 2-42; Fig. 11).
12. Plambeck, Jr. discloses a process for producing relief images, where when fine lines are being produced, a light controlling baffle, such as an egg-crate baffle is used to eliminate rays below a desired minimum angle. (Col. 4, ll. 59-69).

PRINCIPLES OF LAW

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

In an obviousness rejection, the combination of references must be considered as a whole, rather than the specific teaching of each reference. *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971); *In re Simon*, 461 F.2d 1387, 1390 (CCPA 1972). In responding to a *prima facie* case of obviousness, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

ANALYSIS

As Appellant has not separately argued the claims subject to each ground of rejection, we confine our discussion to appealed claims 6, 12, 13, and 15-17, which contain claim limitations representative of the arguments made by Appellant pursuant to 37 C.F.R. § 41.37(c)(1)(vii).³

At the outset, we note that the Examiner has relied on several references to support the position that the use of substantially perpendicular collimated light is conventional in photosensitive printing elements having cylindrical and non-planar surfaces. For the purposes of rendering our decision, we limit our discussion to Wier, Nellissen, Ohba, and Karol as being representative of the prior art cited by the Examiner.

Issue 1: Grounds of Rejection (1) and (5)

We agree with the Examiner that the cited prior art demonstrates that the use of collimated light in photosensitive printing plates having arcuate surfaces, where the light strikes the photosensitive printing element at an angle that is substantially perpendicular to the surface of the printing element at the point of contact is conventional in the art. Specifically, Wier discloses that collimated light is used to promote the formation of steep sides in the photopolymer layer, which Wier discloses results in sharp clear images. (FF 4 and 5). In addition, Ohba, Nellissen, and Karol disclose that collimated light is used in exposing a photoresist on the outside surfaces of cylinders and spheres, which are non-planar. (FF 2, 8, and 9). Further, Wier discloses that the collimated light strikes the photosensitive printing element

³ Only those arguments actually made by Appellant have been considered in this decision. Arguments which Appellant could have made but chose not to make have not been considered and are deemed to be waived. See 37 C.F.R. § 41.37(c)(1)(vii) (2007).

at an angle that is substantially perpendicular to the surface of the printing element at the point of contact in order to produce a clear sharp image. (FF 4). The Examiner's conclusions are also consistent with Karol, which states that the "gist" of the invention is in the use of collimated light in radially collimated beams to expose very accurate patterns in the photoresist. (FF 10). Thus, the Examiner has presented sufficient evidence to support the conclusion that using collimated light such that the light strikes the photosensitive printing element at an angle that is substantially perpendicular to the surface of the cylindrical printing element of Kanga and/or Fan and Cushner would have been obvious to one of ordinary skill in the art.

Appellants' arguments, while stating that the prior art as a whole does not render the presently recited method obvious, improperly focus on the individual teachings of each reference, rather than what the prior art as a whole conveys to one of ordinary skill in the art. Appellants have not shown error in the Examiner's statements regarding what the cited references collectively disclose to one of ordinary skill in the art. For example, Appellants contend that Wier discloses only flat photosensitive printing elements. However, Appellants have not shown that the Examiner erred in finding that it is well known in the art that collimated light may be used to form finer images. (FF 1). In addition, the Examiner relies on Ohba, Nellissen and Karol for disclosing collimated light used on non-planar printing plates. (Ans. 16-18, *See also* FF 2, 8, and 9).

Moreover, we are not persuaded by Appellants' arguments regarding the individual references. Specifically, contrary to Appellants' argument that Wier only discloses a collimator between a mask layer and a

photosensitive layer, Wier expressly discloses a collimator atop a mask, where the mask sits atop the photosensitive layer. (Ans. 15, FF 6).

In addition, Appellants' argument that the light in Ohba is collimated to record an image, not to expose the printing element to actinic radiation is not persuasive. Ohba uses the word "record" interchangeably with "expose" and specifically discloses exposing the printing plate. (FF 7).

Appellants additionally contend that Nellissen does not disclose a cylindrical element or collimated light that strikes the element at a substantially perpendicular angle. (App. Br. 12). However, discussed by the Examiner in the Answer, Nellissen is relied on for the purpose of showing how to image a non planar element with collimated light to end up with a fine image. (Ans. 17).

With respect to Karol, Appellants unduly focus on the manner of mounting the mask on the cylinder, rather than the solution of collimated light to form a finer image on a cylindrical surface. (Ans. 18). Indeed, Karol itself discloses that the invention should not be limited in the manner suggested by Appellants. (FF 10). Accordingly, Appellants' arguments are not persuasive.

Issue 2: Ground of Rejection (2)

Appellants' arguments that Kitamura is not directed to collimated light sources, but is directed to curing an entire surface of resin composition, and cannot be combined with the other prior art references cited by the Examiner, fail to take into account what Kitamura as a whole would convey to one of ordinary skill in the art. We agree with the Examiner's position that Kitamura discloses multiple light sources for imaging the surface of a cylinder, and that one of ordinary skill in the art would understand how to

image a printing plate surface with a mask using multiple sources of light. (Ans. 20). The reasons for collimating light and striking the photosensitive printing element at an angle that is substantially perpendicular to the surface of the printing element at the point of contact are demonstrated by the other references of record as discussed *supra*. Appellants have not provided any persuasive evidence that one of ordinary skill in the art would have been unable to modify the multiple light sources of Kitamura to obtain the art-recognized benefits of collimated light.

Issue 3: Ground of Rejection (3)

Appellant does not dispute that Plambeck, Jr. in view of Ferree discloses the collimator recited in claim 13. Rather, Appellant argues that Plambeck, Jr. and Ferree do not recognize the use of collimated light at substantially perpendicular angles to the surface of a photosensitive printing element. (App. Br. 17-18). We are not persuaded by Appellants' contentions. Appellants have not demonstrated error in the Examiner's position that the egg crate baffles disclosed in Plambeck, Jr. and Ferree are collimators, which remove non-parallel light. (Ans. 21-22). Appellants have also not addressed the Examiner's position that because the angle of taper with respect to the printing surface can be controlled to 90 degrees, the light would be substantially perpendicular to the horizontal base. (Ans. 21). Last, Appellants have not shown error in the Examiner's position that even though Plambeck, Jr. is directed to planar surfaces, that the application to non-planar surfaces would have been understood by one of ordinary skill in the art. (Ans. 22).

Grounds of Rejection (4) and (6)

Appellants do not separately argue the rejections of claims 15 and 17-20. Accordingly, we affirm these rejections for the same reasons as discussed *supra*.

CONCLUSION

Appellant has failed to demonstrate that the Examiner reversibly erred:

(1) in determining that it would have been obvious to one of ordinary skill in the art to employ collimated light in the photosensitive printing elements of Kanga and/or Fan and Cushner such that the light rays emanating from the one or more sources “strike the photosensitive printing element at an angle that is substantially perpendicular to the surface of the photosensitive printing element at the point of impact” in view of the prior art of record;

(2) in determining that it would have been obvious to one of ordinary skill in the art to employ ultraviolet lamps arranged around the photosensitive printing element to simultaneously expose the entire surface of the photosensitive element to actinic radiation in view of Kitamura; and

(3) in determining that the structure of the collimator recited in claim 13 would have been obvious to one of ordinary skill in the art in view of Plambeck, Jr. and Ferree.

ORDER

We affirm all of the Examiner’s rejections of claims 6-10 and 12-25 under 35 U.S.C. § 103(a).

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Application 10/586,414

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a)(1)(v).

AFFIRMED

tc

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